

## The Role of Trade in U.S. Horticulture

Agnes Perez<sup>1</sup>

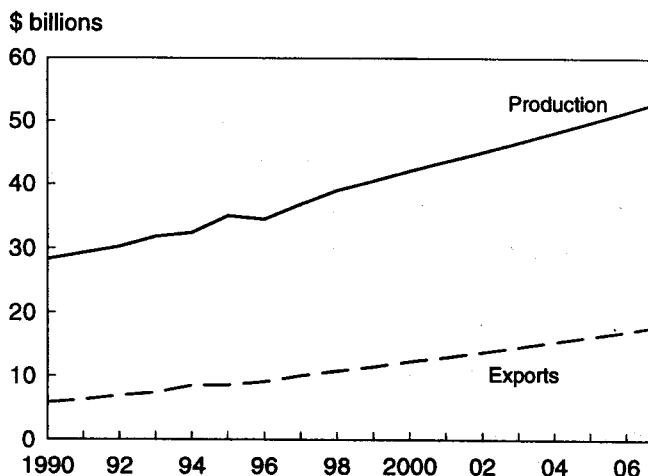
**Abstract:** The long-term prospects for U.S. horticultural trade appear good. Exports will continue to be a primary source of growth for the industry, driven mainly by world economic growth, particularly in developing regions, and by international trade agreements to liberalize global trade. The Asian financial crisis will likely result in diminished demand for a number of U.S. fruit and vegetable products in that region in the short run. But because of the strong export growth to Asia during most of the 1990's and projections of higher than world average economic growth there, Asia will likely remain an important market for U.S. fruit and vegetables, especially with the emergence of new markets, like China. Similarly, increased economic growth in other developing regions, such as in South America, will help expand market opportunities for U.S. fruit and vegetable exports. Imports, particularly of fresh-market produce, will likely continue to be a growing share of domestic consumption.

**Keywords:** Horticulture, exports, imports, fruit, vegetables, long-term, short-term.

International trade has become increasingly critical to the success of the U.S. horticulture sector. In calendar year 1998, U.S. exports of horticultural products<sup>2</sup> are forecast to reach a record \$10.8 billion, up 7 percent from the previous year and nearly double the level of 1990 (figure B-1). The share of U.S. horticultural production that is exported has grown from 20 percent in 1990 to 27 percent in 1997, and is forecast to reach 28 percent in 1998. Even with the large growth in exports over the last 8 years, the United States remains a net importer of horticultural products, with imports rising from \$8.2 billion in 1990 to a forecast of \$12.8 billion in 1998. Exports expand markets for domestically produced products, and imports generally fill seasonal voids in domestic production. Fresh and processed fruit and vegetable imports, including nuts and wine, account for more than 80 percent of the value of U.S. horticultural imports (the remainder attributed to purchases of greenhouse and nursery products). Nearly one-sixth of all fruit and vegetable consumption in the United States comes from imports.

U.S. horticultural producers are projected to post 3 to 4 percent annual gains in production value after 1998, based on slight increases in domestic consumption and 1 to 2 percent increases in output and price. Income growth of trading customers and increased market access are some factors affecting the long-term outlook for horticultural trade. Horticultural exports are projected to increase 5 to 7 percent annual-

Figure B-1  
**Horticultural Production and Exports To Continue To Grow**



ly, with fruit and vegetable exports accounting for 98 percent of total export value, while import value is projected to grow at a steady rate of 4 percent per year. With these anticipated long-term projections, net horticultural trade could favor exports by the end of the next decade.

### Factors Affecting U.S. Horticultural Trade Prospects

The outlook for U.S. horticultural trade is shaped by long-term and short-term factors. Some of the underlying long-term factors are the income growth of trading customers and increased market access stemming from trade liberalization.

<sup>1</sup>Agricultural economist, Specialty Crops Branch, Marketing and Trade Economics Division, Economic Research Service, USDA.

<sup>2</sup>Horticultural products include fruit and nuts (including juice and wine), vegetables (including potatoes, pulses, and mushrooms), and greenhouse and nursery products.

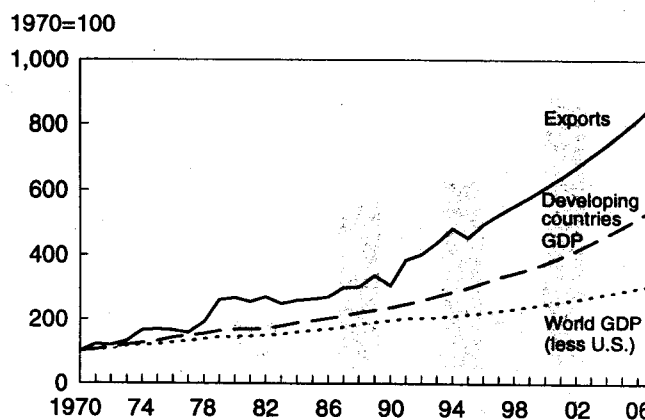
Any deviations from the long-term trend are a result of short-term factors that can intermittently hinder or help trade prospects of U.S. producers. Examples of these short-term factors are changes in the U.S. dollar exchange rates in foreign markets and fluctuations in world supplies. Other factors, such as trade barriers and productivity changes from technological innovations may have a long-term or short-term effect.

There is significant evidence to show that global economic growth will fuel export demand for U.S. fruit and vegetables through the turn of the century (figure B-2). As a country's income grows, their demand for most commodities are expected to increase. Table B-1 further demonstrates the strong relationship between income and U.S. export volume. The first row in this table reports a measure of this correlation (the correlation coefficient) for the period 1970 to 1982, while the second row reports the same measure for 1984 to 1996. In the latter period, all regions represented in the table are wealthier, and almost uniformly show a slightly diminished (but still strong) correlation between income and imports of U.S. fruit and vegetable products. This result helps explain why long-run forecasts for U.S. export growth are higher than for U.S. import growth in fruit and vegetable products. Wealthier countries, such as the United States, are likely to spend diminished shares of increasing incomes on food items, while developing countries (increasingly important customers for U.S. exports) are expected to continue to spend larger shares of new income on food items. This result, combined with projections that most developing countries are going to experience higher than average economic growth through the next decade, will be good for U.S. export prospects.

Global economic growth is projected to average over 3 percent annually over the next decade, well above the growth during 1990 to 1996. Average real gross domestic product (GDP) growth for the U.S. fruit and vegetable industry's top export markets—Canada, the European Union, and Japan—are projected higher during 1997 and beyond. Despite current financial problems, smaller markets in East Asia such as Hong Kong, Taiwan, South Korea, Indonesia, Thailand, and the Philippines will continue to remain important markets. They have shown promise with stronger growth during the 1990's (figure B-3). As soon as financial conditions turn around in these countries, U.S. fruit and vegetable exports

Figure B-2

### Real World GDP Drives Export Growth of Selected Major U.S. Fruit and Vegetables



Included are exports of almonds, fresh apples, fresh oranges, fresh grapes, frozen potatoes, fresh lettuce, and fresh tomatoes.

there will likely continue strong. Real GDP growth in East and Southeast Asia is projected to average 6.8 percent for 1997-2001, down slightly from 8.6 percent during 1990-1996. South America is another developing region where growth in fruit and vegetable exports has been strong in the 1990's, and economic growth there is projected to double in 1997 and beyond.

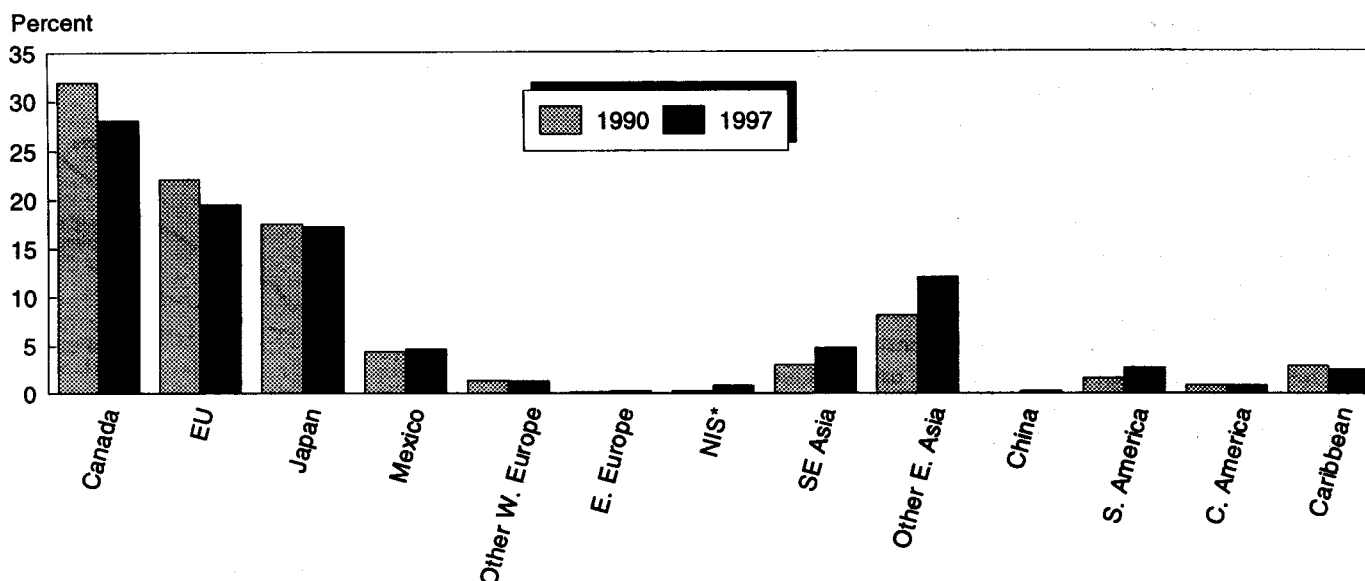
As global trade agreements are reached, increased market access for specific horticultural products will stimulate future export growth in the U.S. fruit and vegetable industry. Examples of these new markets are the opening up of mainland China last year to California fresh table grapes and Washington cherries and the opening up of Japan to most major varieties of U.S. fresh tomatoes. China continues to ban the importation of most U.S. fruit due to phytosanitary concerns. The exceptions are Pacific Northwest apples, Washington cherries, and California table grapes. A positive development, however, is that China has already taken steps to reduce import duties for a wide range of horticultural products, including most fresh vegetable items, tree nuts and fresh fruit, processed fruit and vegetables, and juices, effective October 1, 1997. Similarly, Japan prohibited fresh tomato shipments from almost all countries since 1951 due to phytosanitary concerns over the disease *tobacco blue mold*. Since June 1997, about 302 metric tons of U.S. fresh

Table B-1-- Correlation coefficient on income and U.S. fruit and vegetable exports, selected countries/regions

|                            | World-US | Canada | Japan | EU   | Mexico | H. Kong | S. Korea | China | S. America |
|----------------------------|----------|--------|-------|------|--------|---------|----------|-------|------------|
| Period 1970-82:            |          |        |       |      |        |         |          |       |            |
| Total of selected products | 0.96     | 0.95   | 0.96  | 0.96 | 0.97   | 0.96    | 0.95     | 0.97  | 0.95       |
| Period 1984-96:            |          |        |       |      |        |         |          |       |            |
| Total of selected products | 0.95     | 0.89   | 0.92  | 0.94 | 0.93   | 0.96    | 0.96     | 0.97  | 0.95       |

Export products included in total are almonds, fresh apples, fresh oranges, fresh grapes, frozen potatoes, fresh lettuce, and fresh tomatoes.

Figure B-3

**Export Shares Rising Only In Developing Countries 1/**

1/ Percent of U.S. fruit and vegetable export value. \* New Independent States.

tomatoes were exported to Japan. While tariffs for these commodities still remain high and these new markets still need to be developed, China's projected per capita GDP growth of over 8 percent annually and its large population base and Japan's rapidly growing "western style" food service industry are indicators of their market potential.

In the short-run, the outlook for U.S. horticultural trade is clouded by currency devaluations in Asia since late summer 1997, particularly in Southeast Asian countries such as Thailand, Indonesia, Malaysia, and the Philippines, and to South Korea and Japan as well. Generally, exports of U.S. goods to markets with declining currencies result in U.S. products priced relatively higher than their domestic goods, diminishing the demand for U.S. products in those countries. Meanwhile, exporters from these same countries will be in a more price competitive position in the U.S. market and third country markets. Since many U.S. horticultural product exports are not staple items in the diets of most developing Asian countries, Asian consumers are more likely to substitute U.S. products with local goods or possibly do without, particularly for commodities such as fresh fruit, wine, and nuts. For example, U.S. exports of fresh apples, fresh grapefruit, raisins, and fresh onions to Asia during September to December 1997 have declined from the same period a year earlier (figure B-4). Exports of fresh grapes, almonds, and frozen potatoes, however, increased. To a certain extent, record U.S. production of grapes and almonds in 1997 pulled down prices for these commodities and, along with good fruit quality, helped the United States maintain competitiveness in the Asian market. The Japanese yen had depreciated even before the financial crisis began in

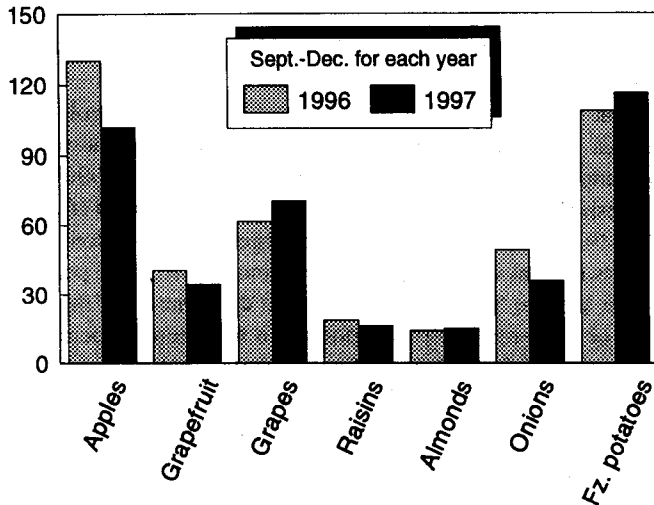
Southeast Asia and has largely contributed to reduced U.S. exports to that country. In 1996, U.S. fruit and vegetable exports to Japan fell 6 percent in value from the previous year and in 1997, exports have gone down 3 percent. Despite the weaker yen, Japanese demand for french fries remains strong. Imports of U.S. frozen potatoes, the top export item of the U.S. fruit and vegetable industry to this foreign market, are still up 6 percent in value terms from 1996 and are also up 8 percent in volume terms. While Southeast Asia is a relatively small market for U.S. fruit and vegetables, the region's share of U.S. fruit and vegetable exports (in value terms) has increased from 3 percent in 1990 to about 5 percent in 1997. South Korea is also a relatively small market, making up 2 to 3 percent of total export value. Japan, on the other hand, is a large market, accounting for approximately 17 percent of total export value.

Fluctuations in world supplies also affect the demand for U.S. exports and U.S. demand for imports in the short-run. The U.S. share of the global market increases when domestic supplies are large and/or traditional suppliers in the world market experience a decline in production. In contrast, U.S. demand for imports rises when domestic production is low and/or traditional suppliers experience a bountiful harvest. These supply factors are generally unpredictable, caused in most cases by unusual weather (either favorable or unfavorable), such as the effects of the El Niño phenomenon. The overall impact of El Niño on 1998 fruit and vegetable production could generate some downward adjustment in the export forecast.

Figure B-4

### U.S. Exports of Selected Fruit and Vegetables To Asian Countries

1,000 metric tons



A number of barriers, both natural and artificial, diminish export opportunities for U.S. producers. Depending on the nature of the barrier, the impacts to U.S. exports could either be long term or short term. Examples of these barriers include costly transportation of products to far off markets and legal trade barriers such as government protectionist policies. Liberalization of trade through multilateral, bilateral, and/or regional trade agreements are important in relaxing many of these existing legal trade barriers either by tariff reductions or harmonizing technical barriers to trade (TBT).

Technical barriers to trade, such as phytosanitary requirements and labeling issues, are an example of a legal trade barrier. TBTs are not necessarily associated with developed or developing countries, but rather involve importing countries setting standards of quality or requirements which potential trade partners must meet. For example, Japanese imports of U.S. apples, banned until 1994, are limited to Red and Golden Delicious apples from Washington and Oregon. Because the Japanese are very concerned about the spread of fire blight, codling moths, and apple maggots, their government imposed rigorous and costly import requirements for U.S. apple shipments. As a result, none of the growers in Washington and Oregon have registered for the 1997/98 export program, resulting in no U.S. apple shipments to Japan for this season. Another example is Brazil's mandatory fumigation at origin requirement for all U.S. fruit entering their market, effective June 1997. This requirement was imposed following the detection of Pacific spider mite and thrips in recent earlier shipments. By the end of July, Brazil agreed to void this fumigation requirement except for U.S. shipments of peaches, nectarines, and apricots. Fresh fruit exports to Brazil increased sharply in the 1990's, attributed mainly to increased exports of key items such as

apples, pears, peaches, and plums. Prospects for future stone fruit exports to this foreign market could be dampened if this mandatory fumigation- at-origin requirement remains in effect for peaches, nectarines, and apricots.

Technological innovations can lead to achieving a larger share of the world market through a competitive advantage—either a higher quality product for the same price, or a lower price for a product of comparable quality. However, these technologies can be exported as well, and so any gains in export market shares may be short lived. The benefits of technology adoption for an exporting country are usually larger with proximity to major export markets. For example, Mexico's tomato export sector, concentrated primarily in the Sinaloa and Baja California regions, have successfully adopted technologies such as drip irrigation, fertigation, plastic mulch, and most importantly, extended shelf-life varieties (ESL), which have boosted yields, decreased area planted, and lowered cost of production in the last few years. Florida had used the same technology package for the last 20 years, but ESL varieties seem to adapt well in Mexico and not in Florida. As a result, Mexican export capacity rose significantly, and the United States had since seen increased imports from these two regions. In addition, the peso devaluation in Mexico beginning in December 1994 provided these two regions additional incentives in the short run to export to the United States.

### The Increasing Importance of U.S. Fruit And Vegetable Exports

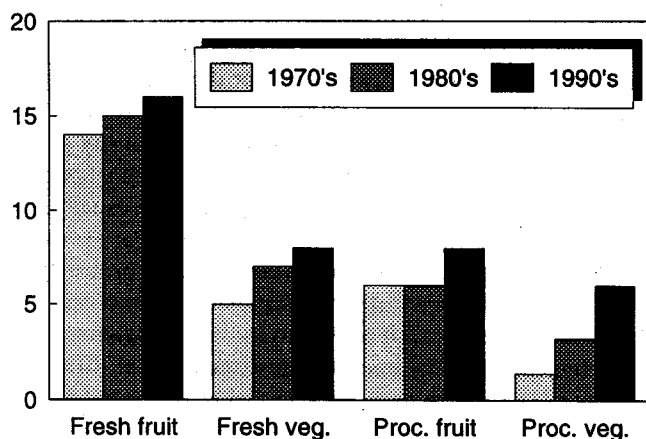
Export markets for U.S. fruit and vegetables continue to be an important source of growth in the U.S. horticulture sector. Total fruit and vegetable exports doubled in value in the past 9 years, from \$4.3 billion in 1989 to over \$9 billion in 1997, and is forecast to reach \$10.5 billion in 1998. Fruit and vegetable export share also has risen from 11 percent of U.S. agricultural export value in 1989 to 17 percent in 1997. Over the last 12 years, sales to foreign markets have also accounted for a growing proportion of U.S. fruit and vegetable supplies. This increasing share is most significant in the U.S. tree nut industry, where the export share of domestic supplies grew from an average of 24 percent in the 1970's to 29 percent in the 1980's and to 40 percent in the 1990's. Almonds are the leading horticultural product export for the United States. Almond exports, which account for 70 percent of all tree nut exports, have increased from 48 percent of supplies in 1975 to 66 percent in 1996.

In the fresh produce industry, export gains were much more gradual (figure B-5). Fresh vegetable and melon exports as a share of domestic supplies averaged about 5 percent in the 1970's, 7 percent in the 1980's, and 8 percent in the 1990's. Fresh fruit exports, on the other hand, averaged 14 percent in the 1970s, 15 percent in the 1980's, and 16 percent in the 1990's. In the fruit and vegetable processing sector, the share of processed fruit exports (including wine) rose from

Figure B-5

### Fresh and Processed Products: Average Export Shares of Domestic Supplies

Percent



an average of 6 percent of domestic supplies in the mid-1970's to 8 percent during the 1990's, while exports of processed vegetables, including potatoes and mushrooms, increased from an average of around 1 percent in the 1970's, 3 percent in the 1980's, and 6 percent in the 1990's.

Export markets will likely continue to expand through the turn of the century, particularly as international trade agreements are reached and barriers to trade are slowly relaxed around the world. Projections of slight increases in domestic fruit and vegetable consumption point to the continued importance of export demand in realizing higher prices and revenues. For domestic fruit producers especially, domestic consumption (fresh and processed fruit) is projected to be relatively flat over the next decade. Bananas and other tropical fruit, particularly mangoes, are projected to be the leading source of increased domestic fruit consumption during 1998-2007. However, supplies of these fruit come mostly from imports. Per capita consumption of other fresh noncitrus fruit, such as apples, grapes, pears, and peaches, is projected to increase less than 1 percent annually, while fresh citrus consumption is projected to remain flat through 2007. Per capita consumption of processed citrus products, mostly juice, as well as other noncitrus fruit products are projected to increase only by a fraction through 2007.

### The Role of Fruit and Vegetable Imports in Domestic Consumption

While growth in exports has been strong, the United States has remained, for most years, a net importer of fruit and vegetables. During 1997, U.S. imports of fruit and vegetables reached \$10.1 billion (up 6 percent from 1996), down from the nearly 16-percent increase in 1996, but consistent with the 1990 to 1996 average increase. Increased production from U.S. farms and Mexico's strengthening peso were some factors that have led to the slower growth in 1997.

Imports are projected to grow at an annual rate of 4 percent, increasing to about \$10.4 billion in 1998. Part of the slowdown in growth may be attributed to Mexico's economic recovery and their expected lower production of winter vegetables due to a freeze in December 1997.

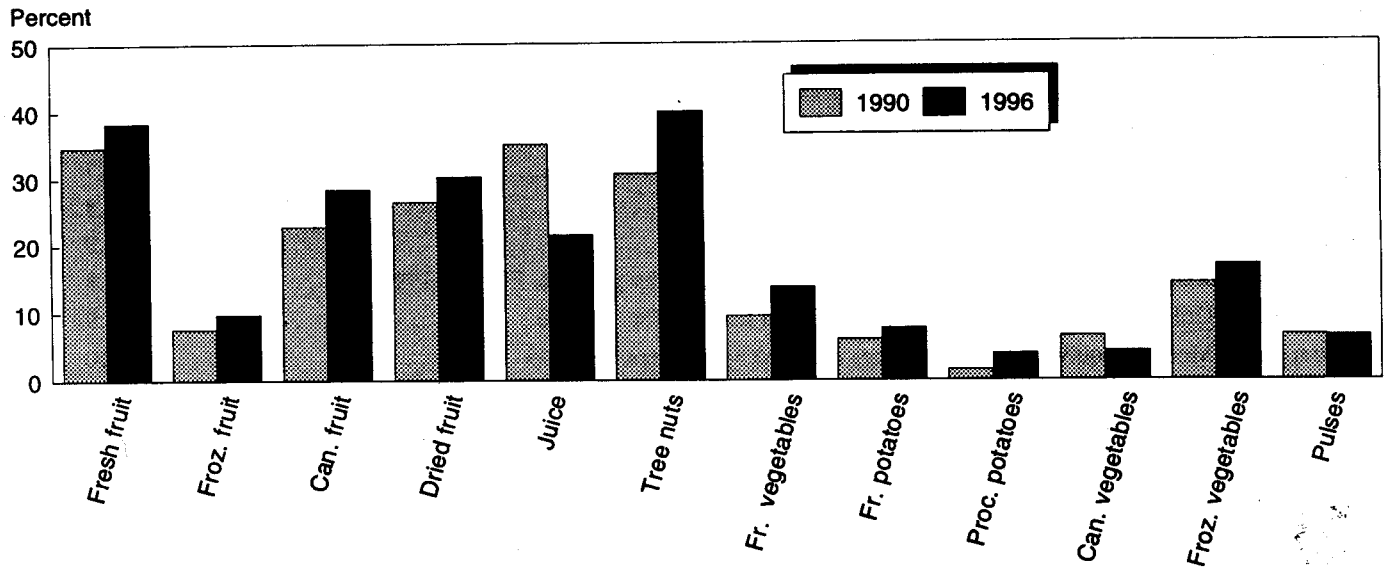
U.S. imports of fruits and vegetables have become increasingly important to domestic consumption. Taking into account import categories that are most significant in volume (at least 1.0 billion pounds), imports as a share of domestic consumption has risen most significantly during the 1990's for fresh-market fruits and vegetables and canned fruit (figure B-6). The share of fresh-market vegetable and melon imports to total vegetable import volume rose from 46 percent in 1990 to 54 percent in 1996. At the same time, the share of fresh-market fruit imports also rose from 35 percent to 46 percent of total fruit and nut imports. Excluding imports of bananas, the share of fresh-market fruits increased from 9 percent to 13 percent. Canned fruit imports are mostly tropical fruit like canned pineapples.

Increased efficiency in the vegetable processing sector has provided the domestic industry a competitive advantage with foreign competitors, and this could explain why canned vegetable imports are showing declining importance in domestic consumption. Juice imports make up a large portion of fruit imports, but in the last few years, juice imports have declined due mostly to lower orange juice imports. This trend will likely continue in 1998 as orange juice production in the United States is forecast to reach another record.

Latin America is the largest supplier of fruit and vegetables to the United States—about 50 percent of the total value in 1997. Mexico is the United States' largest supplier of fresh produce (fruits and vegetables), accounting for over 60 percent of the value of all fresh vegetable imports and 35 percent of the total value of fresh fruit imports. Other major suppliers of fresh produce are Canada for fresh vegetables and Chile for fresh fruits. Key examples of fresh produce imports are tomatoes, sweet peppers, onions, cucumbers, melons, limes (citrus), mangoes, and pineapples from Mexico; grapes, stone fruit, avocados, kiwifruit, and apples from Chile; and potatoes from Canada. For bananas, the major suppliers to the United States, accounting for over 90 percent of import value, are Costa Rica, Honduras, Guatemala, and Panama in Central America; and Ecuador, Colombia, and Venezuela in South America. Western Europe supplies close to a quarter of the value of U.S. fruit and vegetable imports, with processed products such as wine and fruit juices making up over 90 percent of the total value.

Open trade with Mexico, in line with the implementation of the North American Free Trade Agreement in 1994, and the transportation cost advantage associated with the proximity of the two markets, help Mexico remain as a major source of fresh vegetables for the United States. Meanwhile, the counter seasonality in fruit production between the United

Figure B-6

**Imports as a Share of Domestic Consumption**

Excluding bananas, fresh fruit import share rose from 12 percent to 15 percent.

States and Chile has encouraged the presence of Chilean fruit in the U.S. market. Most Chilean fruit enter the U.S. market without much domestic competition during November through March, after the U.S. noncitrus harvest is completed, and extends choices to U.S. consumers beyond the domestic winter fruit of citrus, apples, and pears. During the 1990's, Chilean fresh fruit averaged over 25 percent of U.S. fresh fruit imports.

Unlike in the fresh fruit sector, imports of Mexican fresh vegetables directly compete with domestic production, par-

ticularly from Florida, and to a much lesser extent, California, Texas, and Arizona. During the peso devaluation in Mexico in 1994, U.S. imports of Mexican fresh vegetables rose 20 percent and 15 percent in value for the following 2 years, respectively, with increases in volume as well. U.S. fresh vegetable exports, meanwhile, declined over 60 percent in value in 1995 but rose in 1996. Since its recovery from the peso crisis, U.S. imports of Mexican fresh vegetables had dropped 6 percent in 1997, while U.S. fresh vegetable exports to Mexico continued to increase.